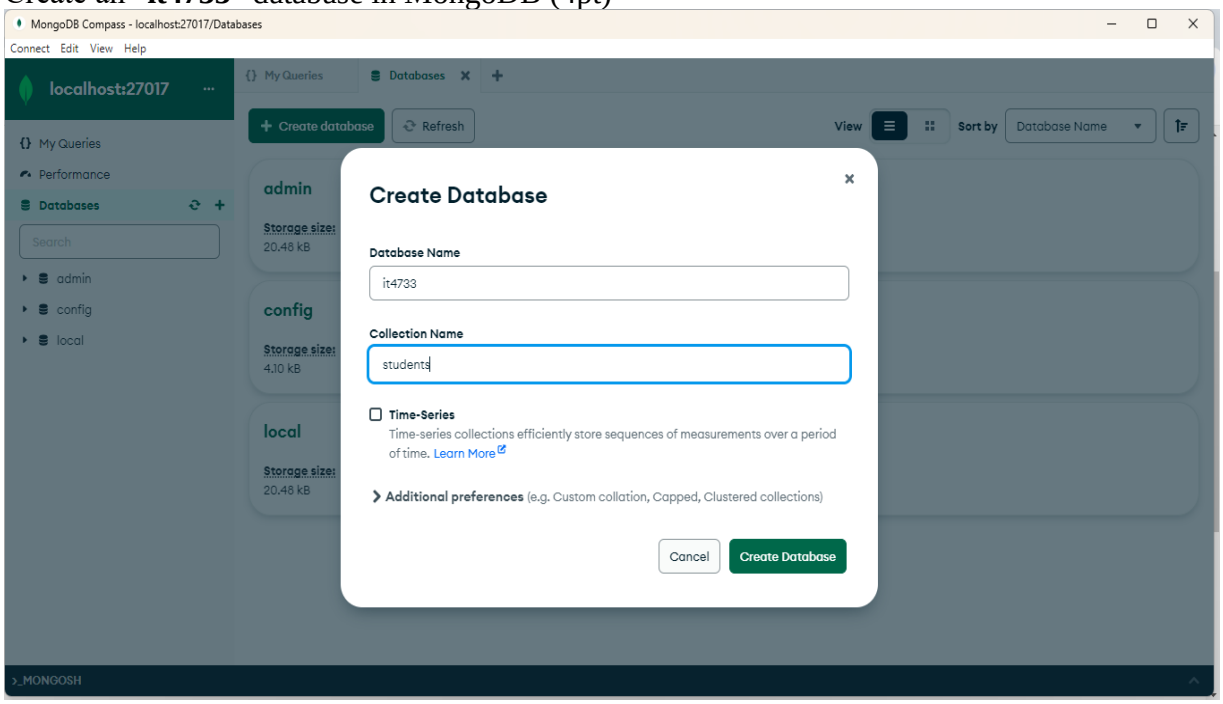
Project 2

Objectives

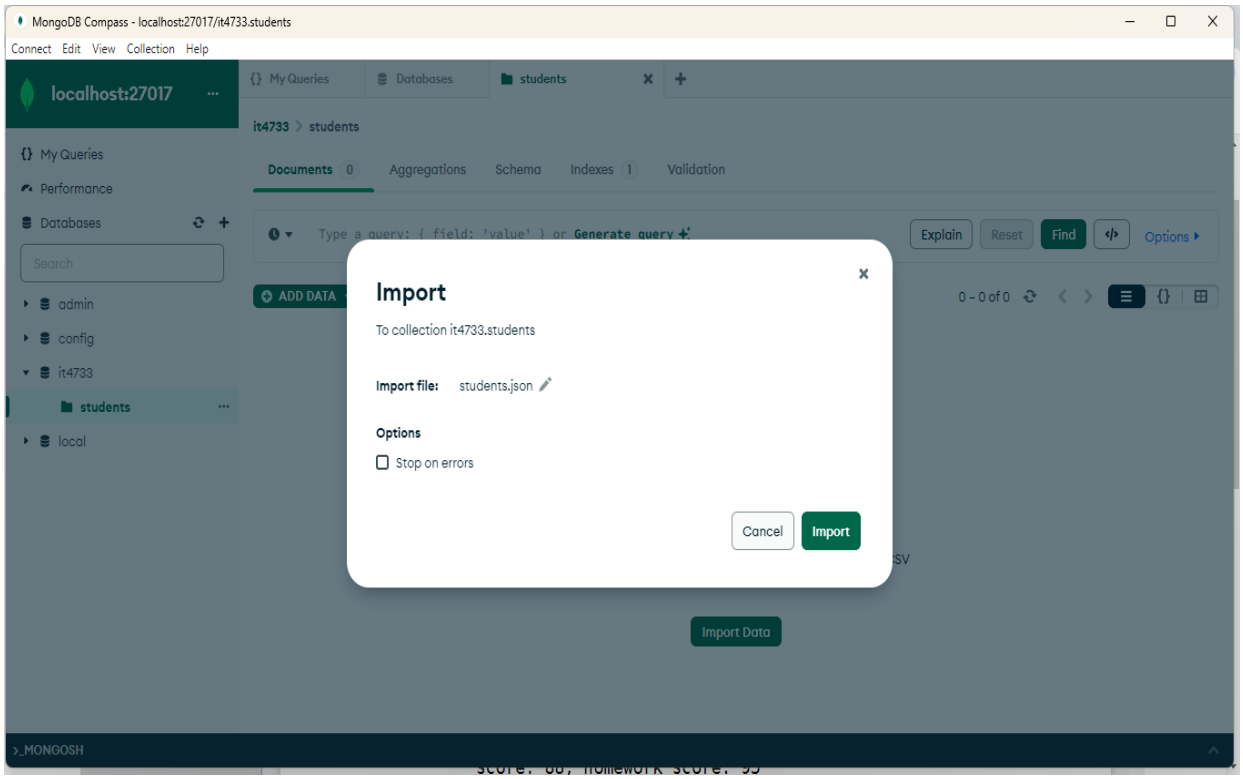
- Practice with MongoDB. This project is more structured than project 1 in that you will import a database to MongoDB and work on the following tasks. For all task, please include the MongoDB code to perform, as well as a screenshot of the result. Please include all codes and screenshots in one word/pdf document and submit for your project.

Tasks

1. Create an "**it4733**" database in MongoDB (4pt)

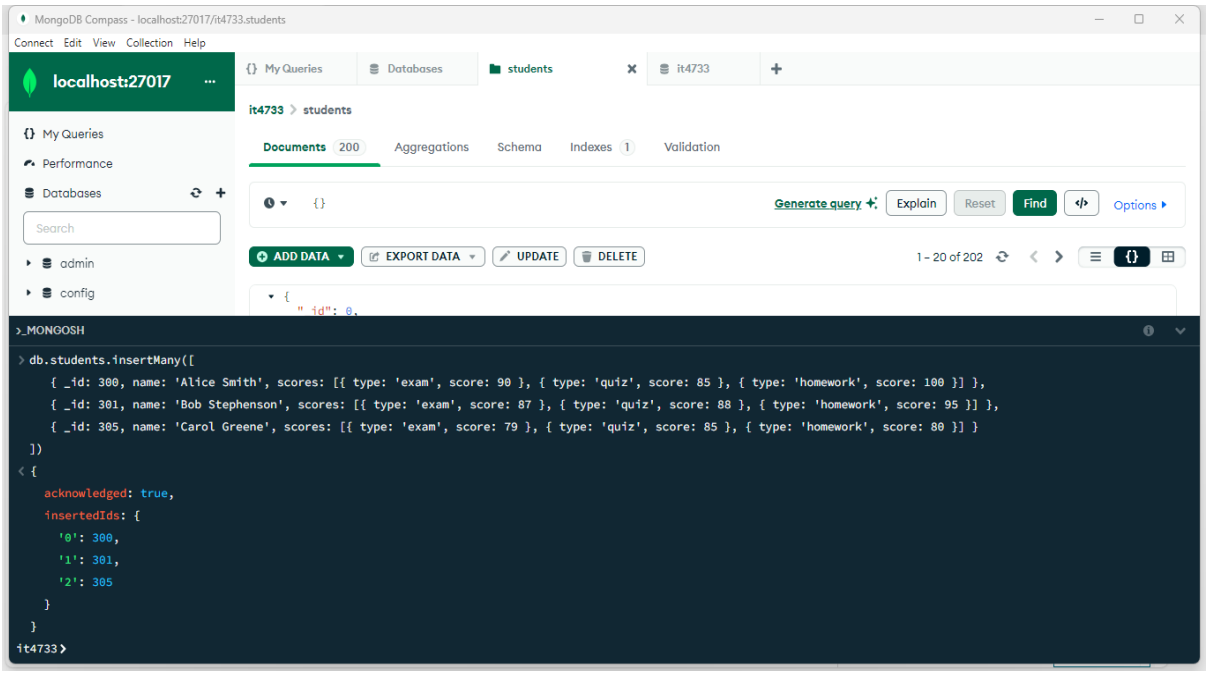


2. Download the ***students.json*** data from https://github.com/ozlerhakan/mongodb-json-files/blob/master/datasets/students.json. Then, import the data into the **it4733** database, collection **students.** (8pt)



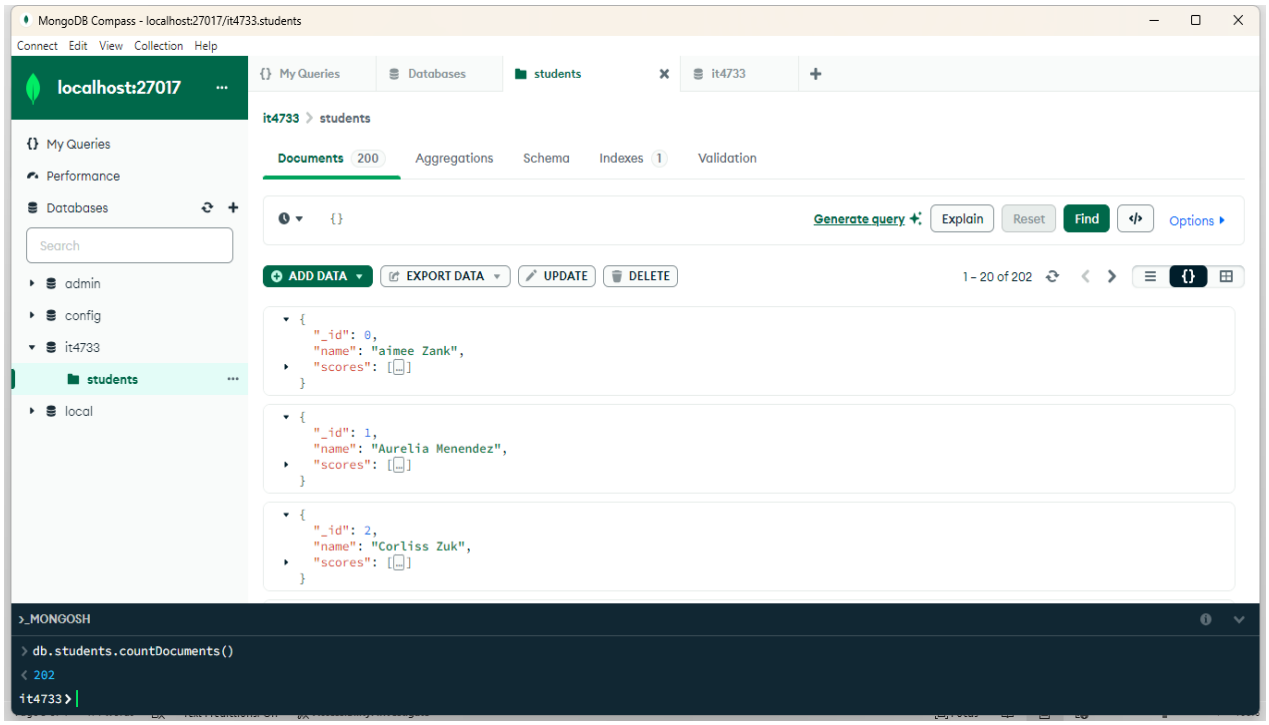
3. Write and run a MongoDB command to insert the following three students into the collection (8pt)

```
1. _id: 300, name: Alice Smith, exam score: 90, quiz
   score:85, homework score: 100
2. _id: 301, name: Bob Stephenson, exam score: 87, quiz
   score: 88, homework score: 95
3. _id: 305, name: Carol Greene, exam score: 79, quiz
   score:85, homework score: 80
```



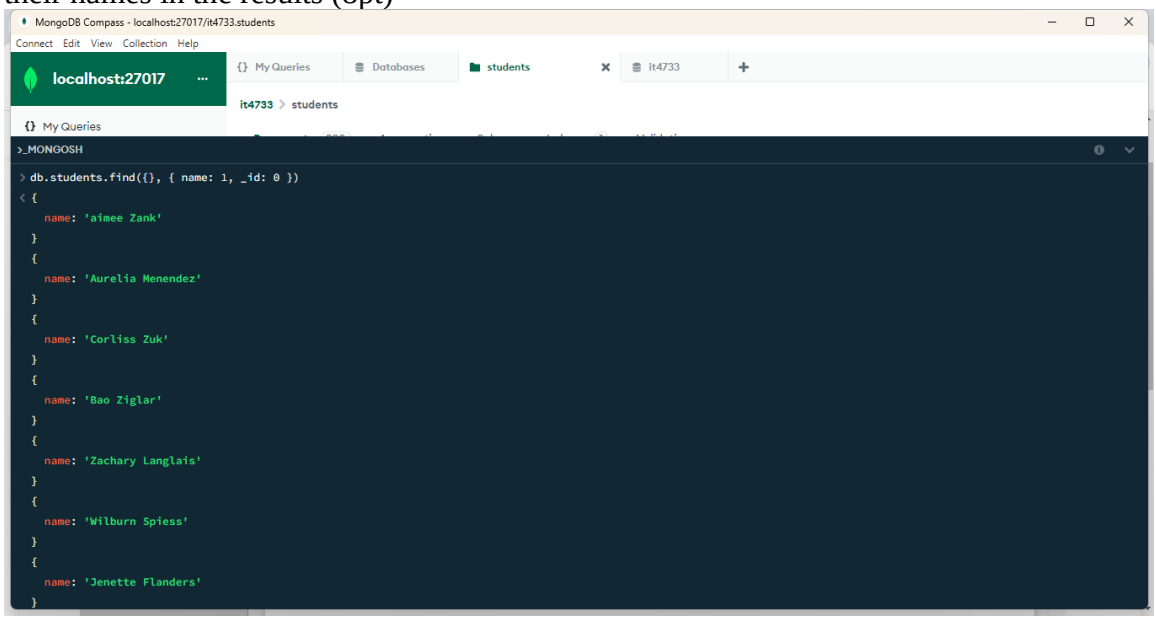
Code: db.students.insertMany([
{ _id: 300, name: 'Alice Smith', scores: [{ type: 'exam', score: 90 }, { type: 'quiz', score: 85 }, { type: 'homework', score: 100 }] },
{ _id: 301, name: 'Bob Stephenson', scores: [{ type: 'exam', score: 87 }, { type: 'quiz', score: 88 }, { type: 'homework', score: 95 }] },
{ _id: 305, name: 'Carol Greene', scores: [{ type: 'exam', score: 79 }, { type: 'quiz', score: 85 }, { type: 'homework', score: 80 }] }
])

4. Write and run a MongoDB command to count the number of students in the collection (8pt)



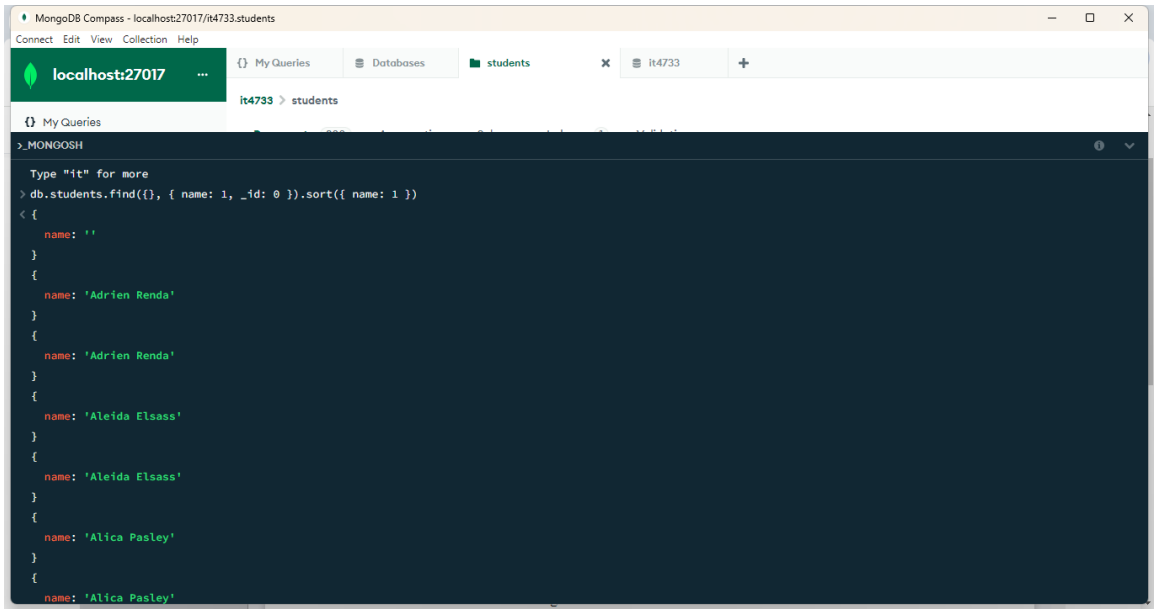
Code: db.students.countDocuments()

5. Write and run a MongoDB command to query all the students and only display their names in the results (8pt)



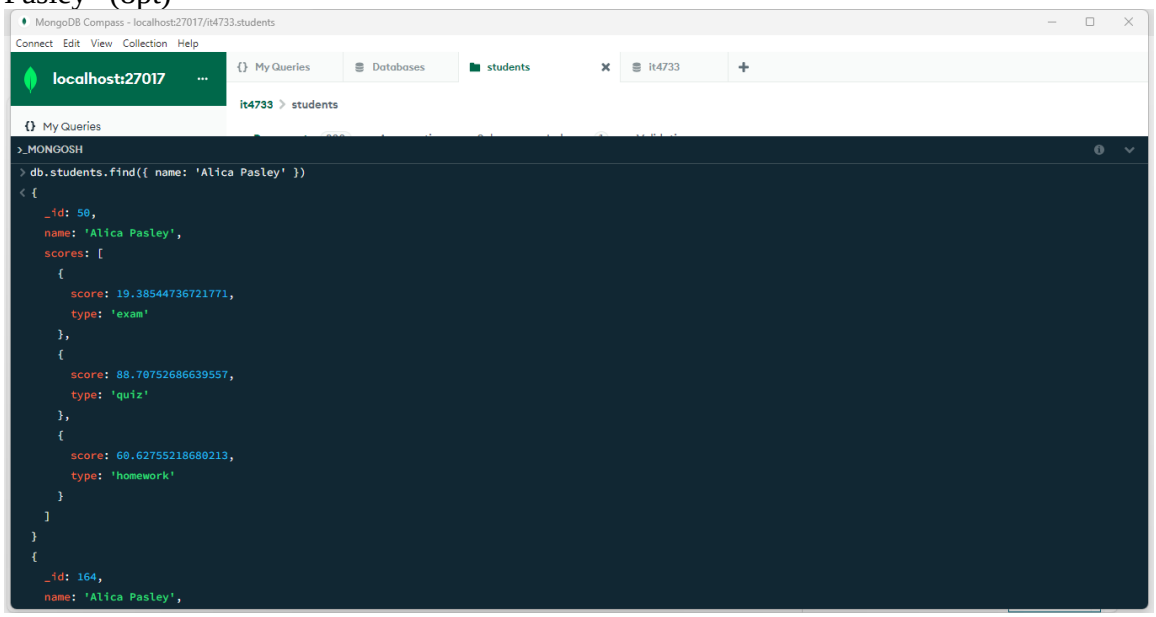
Code: db.students.find({}, { name: 1, _id: 0 })

6. Write and run a MongoDB command to query all the students and only display their names in the results, however, sort the results by names (8pt)



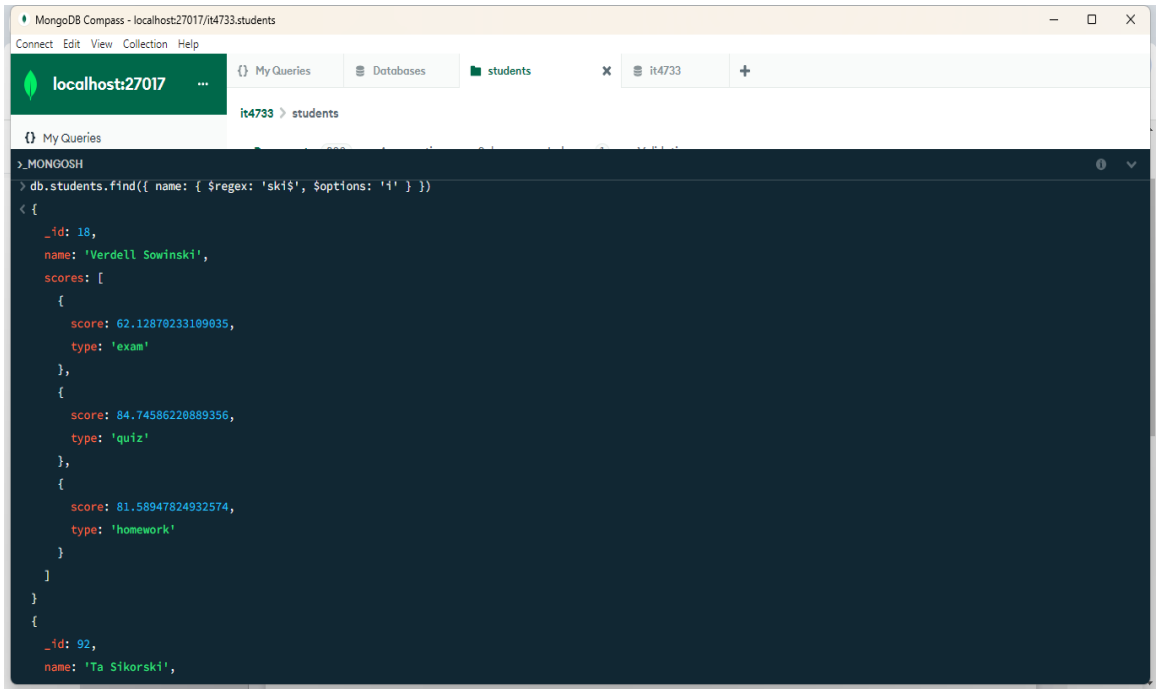
Code: db.students.find({}, { name: 1, _id: 0 }).sort({ name: 1 })

7. Write and run a MongoDB command to query all students whose name is “Alica Pasley” (8pt)



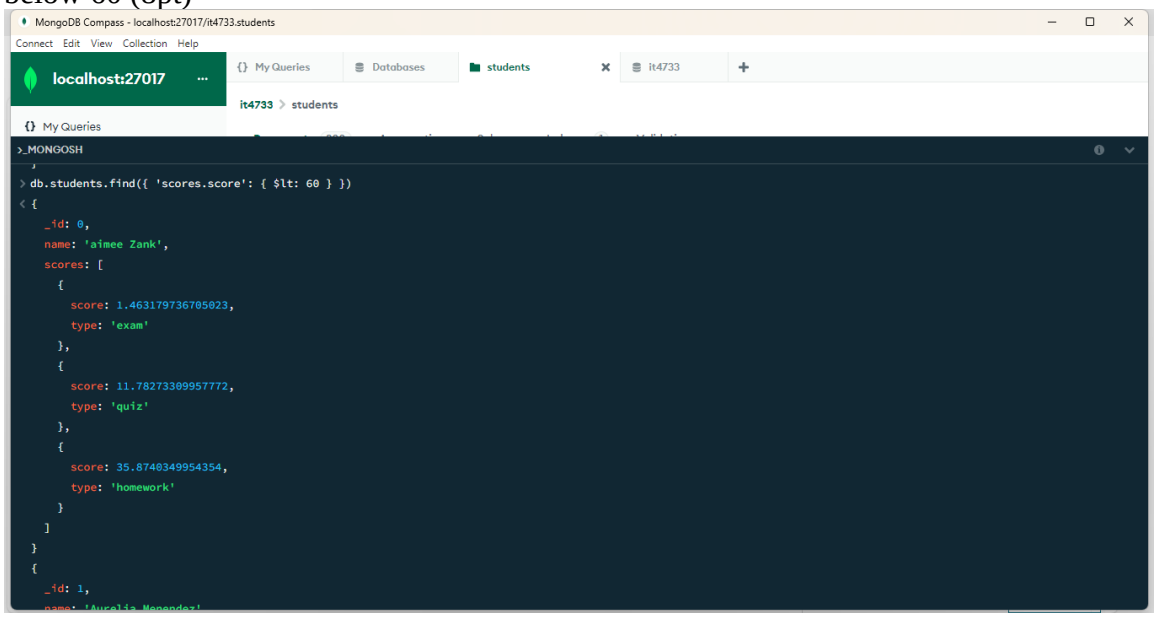
Code: db.students.find({ name: 'Alica Pasley' })

8. Write and run a MongoDB command which is equivalent to "SELECT * FROM students WHERE name LIKE '%ski” (8pt)



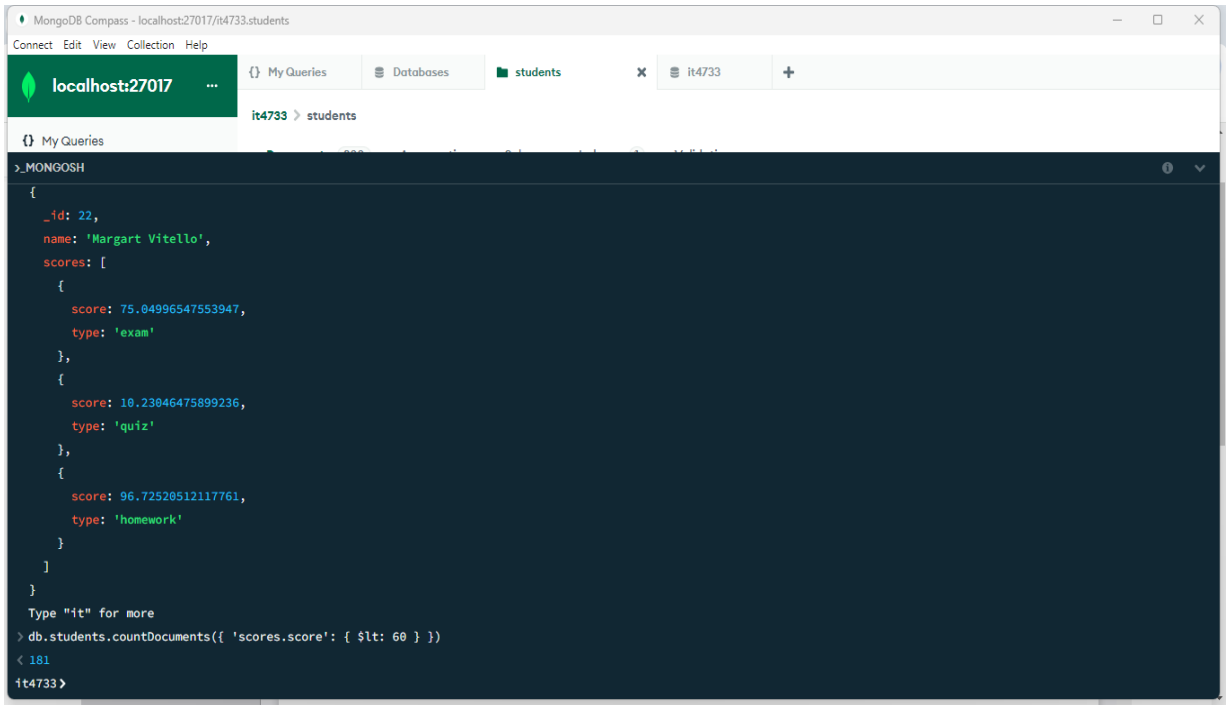
Code: db.students.find({ name: { $regex: 'ski$', $options: 'i' } })

9. Write and run a MongoDB command to find all students with at least one score below 60 (8pt)



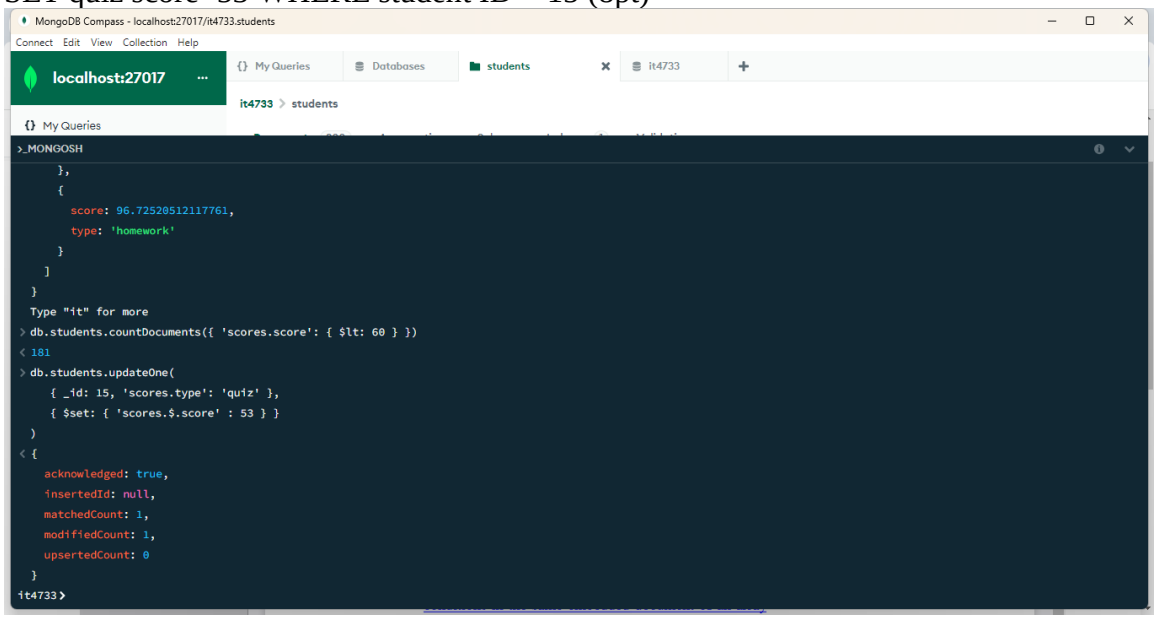
Code: db.students.find({ 'scores.score': { $lt: 60 } })

10. Write and run a MongoDB command to count all students with at least one score below 60 (8pt)



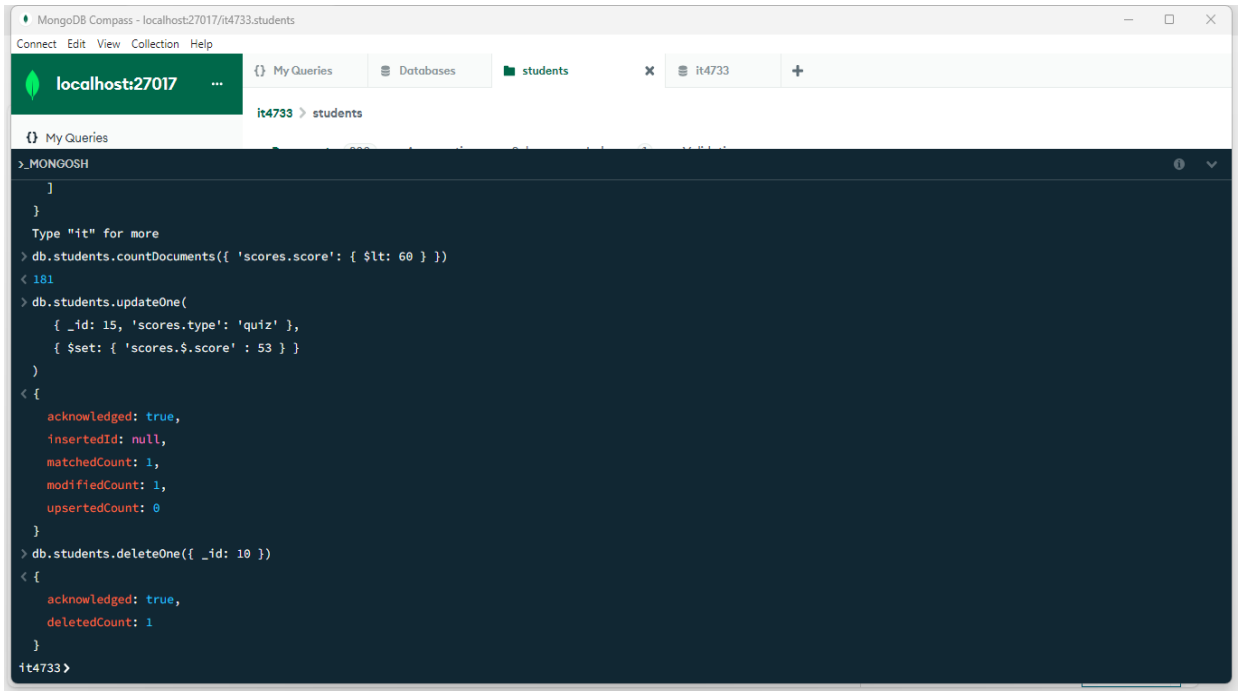
Code: db.students.countDocuments({ 'scores.score': { $lt: 60 } })

11. Write and run a MongoDB command which is equivalent to "UPDATE students SET quiz score=53 WHERE student ID = 15 (8pt)



Code: db.students.updateOne(
{ _id: 15, 'scores.type': 'quiz' },
{ $set: { 'scores.$.score' : 53 } }
)

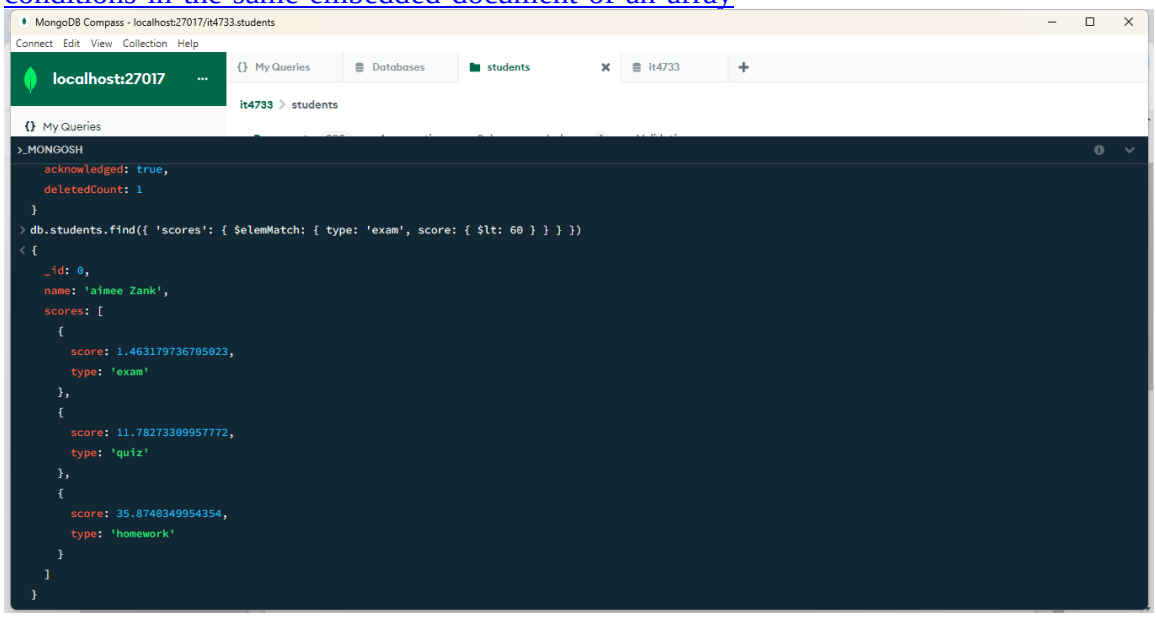
12. Write and run a MongoDB command which is equivalent to "DELETE FROM students WHERE student id=10" (8pt)



Code: db.students.deleteOne({ _id: 10 })

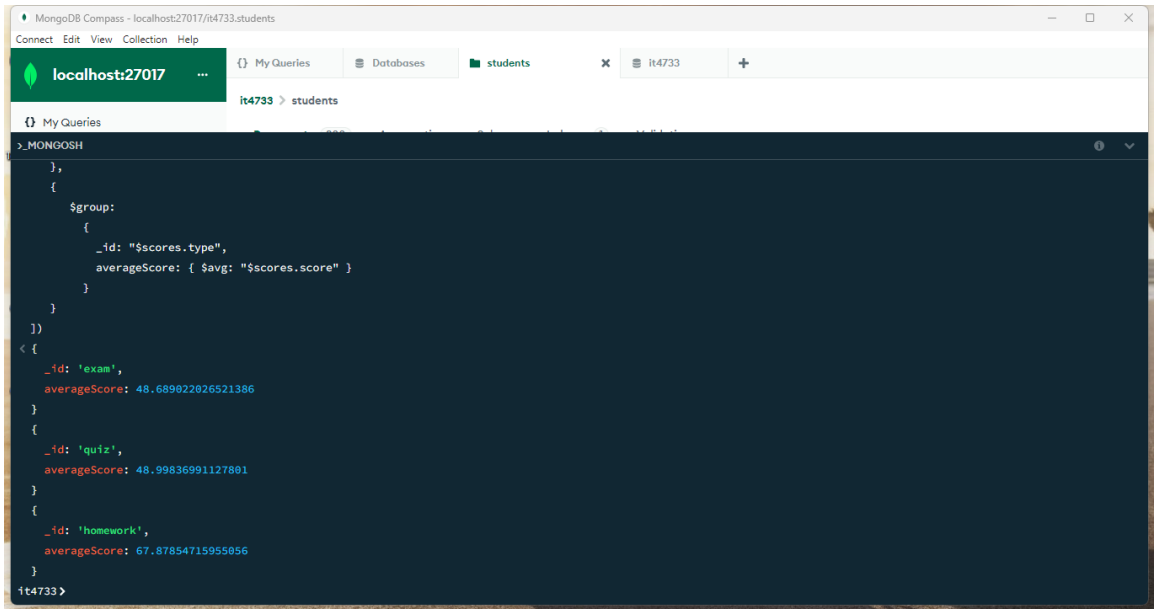
13. Write and run a MongoDB command which is equivalent to "SELECT * FROM students WHERE exam score < 60" (4pt).

    Hint: read the solution in this post and see if you can modify it to work https://stackoverflow.com/questions/39119017/query-with-and-of-two-conditions-in-the-same-embedded-document-of-an-array



Code: db.students.find({ 'scores': { $elemMatch: { type: 'exam', score: { $lt: 60 } } } })

14. **Self-research question:** Write and run a MongoDB command which is equivalent to "SELECT average(exam), average(quiz), average (homework) FROM students (4pt)



Code:

```
db.students.aggregate([
  {
    $unwind: "$scores"
  },
  {
    $group:
      {
        _id: "$scores.type",
        averageScore: { $avg: "$scores.score" }
      }
  }
])
```